



HALEY & ALDRICH, INC.
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Suite 155
Costa Mesa, CA 92626
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29 March 2019
File No. 130072-022

United States Environmental Protection Agency, Region IX
75 Hawthorne Street (SFD-7-3)
San Francisco, California 94105

Attention: Ms. Karen Jurist, Project Manager
California Site Cleanup Section 3

Subject: January 2019 Progress Report
Cooper Drum Company Superfund Site
South Gate, California

Dear Ms. Jurist:

On behalf of the Cooper Drum Cooperating Parties Group (CDCPG), Haley & Aldrich, Inc. prepared this progress report to summarize project work performed at the Cooper Drum Company Superfund Site (Site) during the January 2019 reporting period. This progress report also provides an update on planned work for the two months following the reporting period. This report is being submitted pursuant to Section M of Appendix C of the Consent Decree entered by the United States District Court Central District of California, Western Division, Case 2:15-cv-09931 on 20 April 2016.

Project Work Performed in January 2019

PROJECT MANAGEMENT, COMMUNICATION, AND REPORTS

- The November 2018 Progress Report was submitted to the Environmental Protection Agency (EPA) on 31 January 2019; and
- Project communication and management tasks regarding scheduling, staffing, operation, maintenance, and monitoring (OMM) were completed.

CONSTRUCTION-RELATED TASKS

No construction-related tasks were completed during this period.

OPERATION AND MAINTENANCE

Activities

OMM inspections were performed on a biweekly basis in January 2019. During this reporting period, the following activities were completed:

- The Operable Unit 1 (OU1) groundwater extraction system recovered approximately 448,612 gallons of groundwater during this reporting period with continuous operation at an average flow rate of approximately 10 gallons per minute (gpm).
- Approximately 178 gallons of soil vapor condensate were recovered during the reporting period.
- The soil vapor extraction (SVE) system was in cyclical mode during the reporting period. The SVE system was active for approximately 213 hours from 1 to 9 January 2019 with a 99 percent uptime. Operation focused on DPE wells DPE-1 to DPE-14. The SVE system was inactive from 9 to 31 January 2019.
- Total influent vapor flow rate ranged from 505 to 525 standard cubic feet per minute, with influent vacuum ranging from 89 to 94 inches of water.

Total volatile organic compound (VOC) concentrations for the extraction wells were measured on-site using a handheld photoionization detector (PID). Table I summarizes the treatment system, manifold, and individual DPE well vapor readings collected during SVE operation.

Sample Collection and Analysis

- Vapor samples were collected from the vapor treatment system influent, mid-point, and effluent on 9 January 2019 and submitted to American Analytics for quantification of VOCs using EPA Method TO-15 and Total Non-Methane Organic Compounds (TNMOC; measured as hexane using EPA Method TO-3). The concentrations of detected VOCs in the effluent samples were below the exhaust limits in the South Coast Air Quality Management District's (SCAQMD) Various Locations Permit. The analytical results are summarized in Table II; the laboratory report is included as Attachment A.
- Water samples were collected from the groundwater extraction treatment system on 9 January 2019. Samples were submitted to American Analytics and analyzed for VOCs using EPA Method 8260B and 1,4-dioxane using EPA Method 8270M-isotope dilution. The analytical results for these samples are summarized in Table III; the laboratory report is included in Attachment B.

Remediation Progress

A summary of the mass removal by the SVE/DPE and groundwater treatment systems and the volume of groundwater treated during this reporting period are provided below:

- Approximately 0.22 pounds of chemicals of concern (COC) were removed by the groundwater extraction system during the reporting period;
- Approximately 23 pounds of COC have been removed by the groundwater extraction system since July 2012;

- No perched (OU2) groundwater was extracted during the reporting period. According to perched groundwater gauging results, the perched zone has been dry since 2015;
- Cumulative volumes of extracted perched (OU2) and OU1 groundwater were approximately 1,117,865 gallons and 34,778,695 gallons, respectively (Figure 1);
- Approximately 0.47 pounds of COC were removed by the SVE system during the reporting period; and
- The cumulative COC and VOC mass removal by the SVE system were approximately 582 and 800 pounds, respectively. This information is shown graphically in Figure 2.

OTHER FIELD-RELATED TASKS

- No other field-related tasks were completed during this period.

Project Work Performed or Planned in February and March

Project tasks performed or planned for February and March 2019 are listed below:

- Continue cyclical operation of SVE and DPE wells;
- Collect vapor samples from the soil vapor treatment system on a monthly basis during operation per substantive requirements specified in the South Coast Air Quality Management District (SCAQMD) various locations permit;
- Continue OU1 groundwater extraction from wells EW-2, EW-4, EW-5, EW-7A/B, and EW-A;
- Collect quarterly OU1 groundwater samples from new monitoring wells MW-63, MW-64A, and MW-64B;
- Collect water samples from the groundwater treatment system on a monthly basis for performance evaluation; and
- Submit monthly progress reports.

Please call Mr. Peter Bennett at (510) 879-4547 or Mr. John Lang at (513) 325-2732 if you have any questions regarding this progress report.

Sincerely yours,
HALEY & ALDRICH, INC.



Christopher J. Tsiatsios, PE
Associate Engineer



Peter Bennett, CHG
Principal Hydrogeologist

29 March 2019

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Attachments:

- Table I – Field Monitoring Results for Soil Vapor
- Table II – Vapor Treatment System Analytical Results
- Table III – Groundwater Treatment System Analytical Results
- Figure 1 – Cumulative Volume of Groundwater Extracted from OU1 and OU2
- Figure 2 – Cumulative COC and VOC Mass Removal by SVE System
- Attachment A – Soil Vapor Treatment System Laboratory Analytical Report
- Attachment B – Groundwater Treatment System Laboratory Analytical Report

c: California Department of Toxic Substances Control; Attn: Ms. Lori Parnass
Cooper Drum Cooperating Parties Group; Attn: Mr. John Hoffman
Cooper Drum Cooperating Parties Group; Attn: Mr. John Lang
Cooper Drum Cooperating Parties Group; Attn: Ms. Beth Hesse
Gilbane, Inc.; Attn: Mr. Don Gruber
Los Angeles Unified School District; Attn: Mr. Anthony Espinoza
Los Angeles Unified School District; Attn: Mr. Steven Morrill
United States Environmental Protection Agency Region 9; Attn: Ms. Tessa Berman
City of South Gate Public Works Department, Attn: Mr. Chris Castillo
City of South Gate Public Works Department, Attn: Mr. Clint Herrera
City of South Gate Public Works Department, Attn: Mr. Victor Chavez

G:\38945 Cooper Drum\002 - Regulatory Interaction\Monthly Report\2019\2019-01\2019_0329_HAI_Jan2019_Progress_Rpt_F.docx

TABLES

TABLE I

FIELD MONITORING RESULTS FOR SOIL VAPOR
 COOPER DRUM COMPANY SUPERFUND SITE
 SOUTH GATE, CALIFORNIA

Page 1 of 1

Date	CONCENTRATIONS AT SVE WELLS - Manifold (ppmv)										CONCENTRATIONS AT SVE SYSTEM (ppmv)			
	SVE-3	SVE-4	SVE-5	SVE-6	SVE-7	SVE-8	SVE-9	SVE-10	SVE-11	SVE-12	HWA	DPA	INF	EFF
1/2/2019	--	--	--	--	--	--	--	--	--	--	0.4	1.7	0.6	0.0
1/9/2019	--	--	--	--	--	--	--	--	--	--	0.0	7.0	0.0	0.0
Date	CONCENTRATIONS AT DPE WELLS - Manifold (ppmv)													
	DPE-1	DPE-2	DPE-3	DPE-4	DPE-5	DPE-6	DPE-7	DPE-8	DPE-9	DPE-10	DPE-11	DPE-12	DPE-13	DPE-14
1/2/2019	0.6	0.0	0.7	0.0	1.3	0.7	2.5	0.0	0.0	0.4	0.0	0.4	0.0	0.8
1/9/2019	0.0	0.0	0.7	0.0	4.7	0.0	19.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0

Notes:

Sample results collected using photoionization detector (PID)

INF = Influent

DPA = Influent from Drum Processing Area

ppmv = parts per million by volume

DPE = Dual Phase Extraction

SVE = Soil Vapor Extraction

EFF = Effluent

VOC = Volatile Organic Compound

HWA = Influent from Hard Wash Area

-- = not measured

TABLE II
 VAPOR TREATMENT SYSTEM ANALYTICAL RESULTS
 COOPER DRUM COMPANY SUPERFUND SITE
 SOUTH GATE, CALIFORNIA

Analyte	Vapor Concentrations ($\mu\text{g}/\text{m}^3$)			SCAQMD Various Locations Permit
	Influent	Midpoint	Effluent	Exhaust Limit $\mu\text{g}/\text{m}^3$
Benzene	ND<19	ND<19	ND<2.4	63.9
1,1-Dichloroethane	46	56	12	405
1,2-Dichloroethane	ND<20	ND<20	3.8	40.5
1,1-Dichloroethene	21	24	5.7	NA
trans-1,2-Dichloroethene	16	18	3.5	NA
cis-1,2-Dichloroethene	160	160	33	NA
Ethylbenzene	ND<20	ND<20	ND<2.5	868
Methyl-t-Butyl Ether (MTBE)	ND<20	ND<20	ND<2.5	721
Methylene Chloride	ND<97	ND<97	ND<12	730
Tetrachloroethene (PCE)	900	230	ND<3.4	204
1,1,2,2-Tetrachloroethane	ND<100	ND<100	ND<13	68.7
Trichloroethene (TCE)	370	240	ND<2.7	1075
Vinyl Chloride	ND<20	ND<20	3.5	25.6
1,2-Dichloropropane	ND<20	ND<20	ND<2.5	NA
1,2,3-Trichloropropane	ND<24	ND<24	ND<3	NA
1,4-Dioxane	ND<20	ND<20	ND<2.5	NA
TNMOC as Hexane*	ND<1.2	ND<1.2	ND<1.2	NA

Notes:

Samples were submitted to American Analytics and analyzed for volatile organic compounds using EPA Method TO-15 and Total Non-Methane Organic Compounds measured as hexane using EPA Method TO-3

*TNMOC results are shown in parts per million by volume (ppmv)

ND Not detected at a concentration equal to or greater than indicated reporting limit

$\mu\text{g}/\text{m}^3$ micrograms per cubic meter

TNMOC Total Non-Methane Organic Compounds

SCAQMD South Coast Air Quality Management District

NA Chemical Exhaust Limit Not Listed in SCAQMD Various Locations Permit

TABLE III
GROUNDWATER TREATMENT SYSTEM ANALYTICAL RESULTS
COOPER DRUM COMPANY SUPERFUND SITE
SOUTH GATE, CALIFORNIA

Analyte	Groundwater Concentrations ($\mu\text{g/L}$)		
	OU1 Groundwater Extraction Wells Influent	OU2 Dual Phase Extraction Wells Influent	OU1 & OU2 Combined Flow Effluent
	1/9/2019	NM	1/9/2019
LACSD TOTAL VOC EFFLUENT DISCHARGE LIMIT	-	-	1,000
CALCULATED TOTAL VOC EFFLUENT DISCHARGE	-	-	50
Benzene	1.8	NM	1.5
Bromodichloromethane	ND<0.20	NM	ND<0.20
Bromoform	ND<0.50	NM	ND<0.50
Bromomethane	ND<0.50	NM	ND<0.50
Carbon Tetrachloride	ND<0.30	NM	ND<0.30
Chlorobenzene	ND<0.30	NM	ND<0.30
Chloroethane	ND<0.50	NM	ND<0.50
Chloroform	ND<0.30	NM	ND<0.30
Chloromethane	ND<0.40	NM	ND<0.40
Dibromochloromethane	ND<0.30	NM	ND<0.30
1,2-Dichlorobenzene	ND<0.30	NM	ND<0.30
1,3-Dichlorobenzene	ND<0.10	NM	ND<0.10
1,4-Dichlorobenzene	ND<0.30	NM	ND<0.30
1,1-Dichloroethane	1.9	NM	1.4
1,2-Dichloroethane	2.5	NM	1.7
1,1-Dichloroethene	0.86	NM	0.60
cis-1,2-Dichloroethene	40	NM	31
trans-1,2-Dichloroethene	5.3	NM	3.5
1,2-Dichloropropane	ND<0.50	NM	ND<0.50
cis-1,3-Dichloropropene	ND<0.20	NM	ND<0.20
trans-1,3-Dichloropropene	ND<0.20	NM	ND<0.20
Ethylbenzene	ND<0.20	NM	ND<0.20
Methylene Chloride	ND<5.0	NM	ND<5.0
1,1,2,2-Tetrachloroethane	ND<0.30	NM	ND<0.30
Tetrachloroethene (PCE)	ND<0.50	NM	ND<0.50
Toluene	ND<0.30	NM	ND<0.30
1,1,1-Trichloroethane	ND<0.30	NM	ND<0.30
Trichloroethene (TCE)	2.3	NM	1.6
1,2,3-Trichloropropane	ND<0.30	NM	ND<0.30
Vinyl Chloride	ND<0.50	NM	ND<0.50
1,4-Dioxane	8.5	NM	8.4

Notes:

Samples were submitted to American Analytics and analyzed for VOCs using EPA Method 8260B

and 1,4-dioxane using EPA Method 8270M-isotope dilution

LACSD = Los Angeles County Sanitation District

VOC = Volatile Organic Compound

ND = Not detected at a concentration equal to or greater than indicated reporting limit

OU1 = Operable Unit 1

OU2 = Operable Unit 2

J = The detected concentration is below the reporting limit and is estimated.

$\mu\text{g/L}$ = micrograms per liter

NM = Not Measured due to OU-2 being dewatered

FIGURES

FIGURE 1

CUMULATIVE VOLUME OF GROUNDWATER EXTRACTED FROM OU1 AND OU2
COOPER DRUM COMPANY SUPERFUND SITE
SOUTH GATE, CALIFORNIA

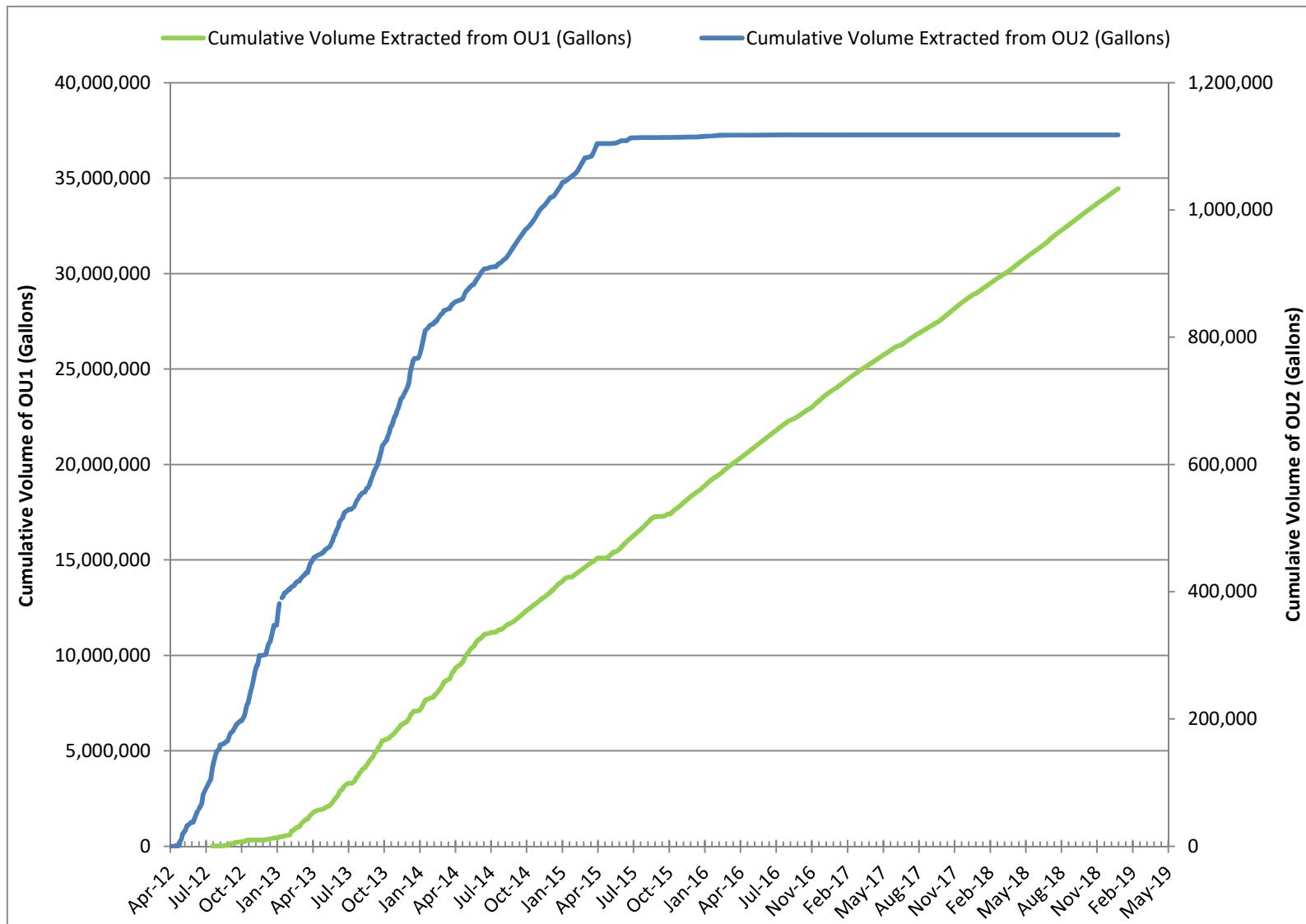
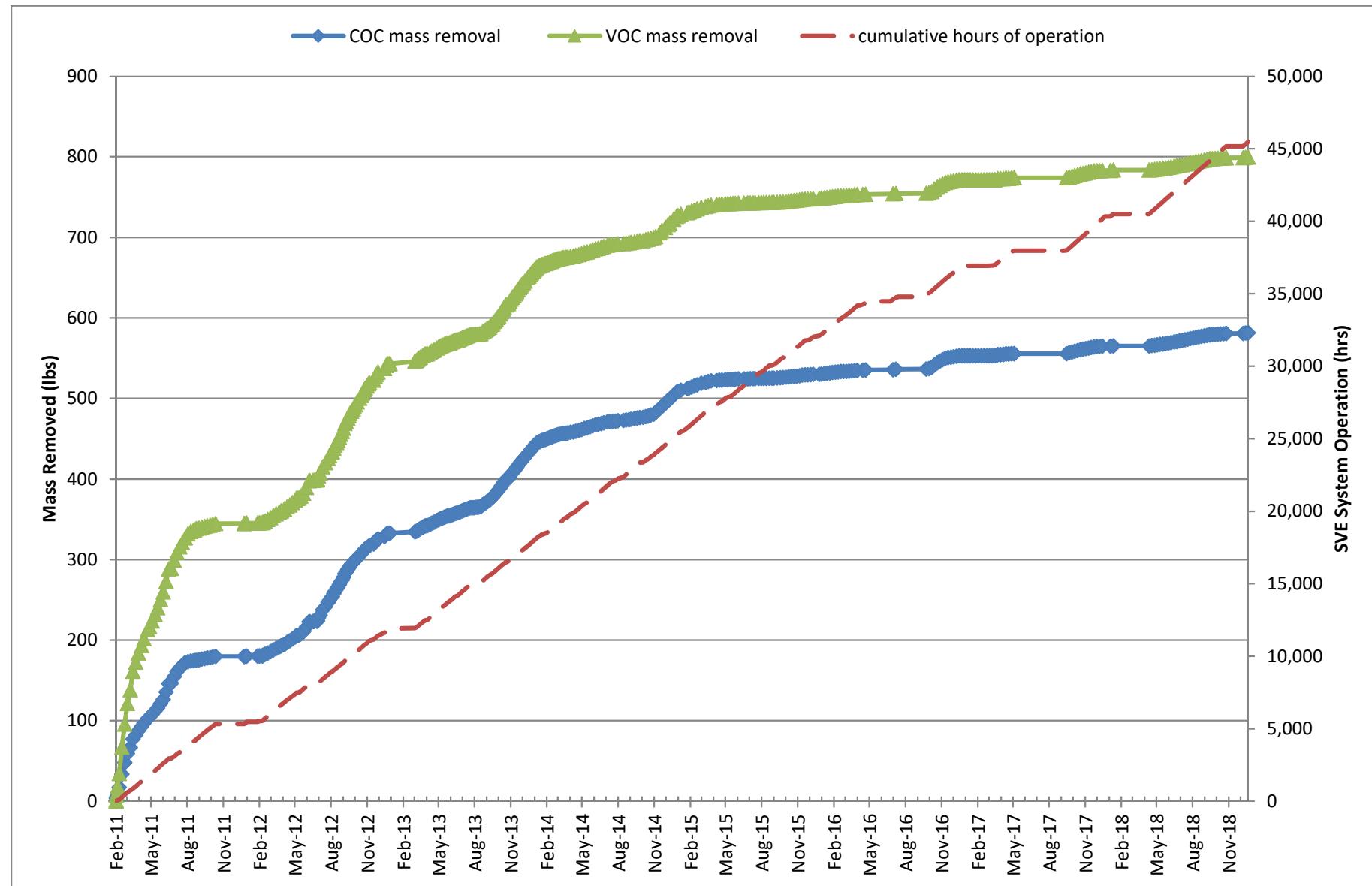


FIGURE 2

CUMULATIVE COC AND VOC MASS REMOVAL BY SVE SYSTEM
COOPER DRUM COMPANY SUPERFUND SITE
SOUTH GATE, CALIFORNIA



ATTACHMENT A

Soil Vapor Treatment System Laboratory Analytical Report



9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

January 18, 2019

Peter Bennett
Haley & Aldrich (Oakland)
1956 Webster St., Suite 450
Oakland, CA 94612

Re : Cooper Drum - South Gate / 130072-015-1
A874340 / 9A09015

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 01/09/19 14:53 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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TO-15 (Mid Level) ppbv

SVE-VGACI-010919-0001	9A09015-01	Vapor	5	01/09/19 11:45	01/09/19 14:53
SVE-VGACM-010919-0001	9A09015-02	Vapor	5	01/09/19 11:40	01/09/19 14:53
SVE-VGACE-010919-0001	9A09015-03	Vapor	5	01/09/19 11:35	01/09/19 14:53
TO-3 VOCs as Hexane					
SVE-VGACI-010919-0001	9A09015-01	Vapor	5	01/09/19 11:45	01/09/19 14:53
SVE-VGACM-010919-0001	9A09015-02	Vapor	5	01/09/19 11:40	01/09/19 14:53
SVE-VGACE-010919-0001	9A09015-03	Vapor	5	01/09/19 11:35	01/09/19 14:53

A handwritten signature in black ink, appearing to read 'Viorel Vasile'.

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 2
Method: VOCs by GCMS EPA TO-15

SVE-VGACI-010919-0001

9A09015-01 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
Acetone	<0.100	ug/L	0.050	<42
Benzene	<0.019	ug/L	0.0096	<6.0
Benzyl chloride	<0.10	ug/L	0.050	<19
Bromodichloromethane	<0.10	ug/L	0.050	<15
Bromoform	<0.099	ug/L	0.050	<9.6
Bromomethane	<0.020	ug/L	0.010	<5.2
2-Butanone (MEK)	<0.10	ug/L	0.050	<34
Carbon Disulfide	<0.100	ug/L	0.050	<32
Carbon Tetrachloride	<0.026	ug/L	0.013	<4.2
Chlorobenzene	<0.020	ug/L	0.010	<4.4
Chloroethane	<0.020	ug/L	0.010	<7.6
Chloroform	<0.020	ug/L	0.0098	<4.0
Chloromethane	<0.020	ug/L	0.0099	<9.6
Dibromochloromethane	<0.039	ug/L	0.020	<4.6
1,2-Dibromoethane (EDB)	<0.040	ug/L	0.020	<5.2
1,2-Dichlorobenzene	<0.040	ug/L	0.020	<6.6
1,3-Dichlorobenzene	<0.040	ug/L	0.020	<6.6
1,4-Dichlorobenzene	<0.040	ug/L	0.020	<6.6
Dichlorodifluoromethane (R12)	<0.099	ug/L	0.049	<20
1,1-Dichloroethane	0.046	ug/L	0.0081	11
1,2-Dichloroethane (EDC)	<0.020	ug/L	0.010	<5.0

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 2
Method: VOCs by GCMS EPA TO-15

SVE-VGACI-010919-0001

9A09015-01 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
cis-1,2-Dichloroethylene	0.16	ug/L	0.0079	41 ppbv
1,1-Dichloroethylene	0.021	ug/L	0.0079	5.4 ppbv
trans-1,1,2-Dichloroethylene	0.016	ug/L	0.0079	4.1 ppbv
1,2-Dichloropropane	<0.020	ug/L	0.010	<4.4 ppbv
trans-1,3-Dichloropropylene	<0.020	ug/L	0.01	<4.4 ppbv
cis-1,3-Dichloropropylene	<0.020	ug/L	0.01	<4.4 ppbv
Dichlorotetrafluoroethane	<0.10	ug/L	0.050	<14 ppbv
1,4-Dioxane	<0.020	ug/L	0.010	<5.6 ppbv
Ethylbenzene	<0.020	ug/L	0.01	<4.6 ppbv
4-Ethyltoluene	<0.020	ug/L	0.0098	<4.0 ppbv
Hexachlorobutadiene	<0.10	ug/L	0.050	<9.4 ppbv
2-Hexanone (MBK)	<0.098	ug/L	0.049	<24 ppbv
Isopropanol (IPA)	<0.20	ug/L	0.10	<82 ppbv
Methyl-tert-Butyl Ether (MTBE)	<0.020	ug/L	0.010	<5.6 ppbv
Methylene Chloride	<0.097	ug/L	0.049	<28 ppbv
4-Methyl-2-pentanone (MIBK)	<0.098	ug/L	0.049	<24 ppbv
Styrene	<0.020	ug/L	0.0098	<4.6 ppbv
1,1,2,2-Tetrachloroethane	<0.10	ug/L	0.050	<15 ppbv
Tetrachloroethylene (PCE)	0.90	ug/L	0.014	130 ppbv
Toluene	<0.098	ug/L	0.049	<26 ppbv
1,2,4-Trichlorobenzene	<0.040	ug/L	0.020	<5.4 ppbv


Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 2
Method: VOCs by GCMS EPA TO-15

SVE-VGACI-010919-0001
9A09015-01 (Vapor)

		AA Project No: A874340	
		Date Received: 01/09/19	
		Date Reported: 01/18/19	
		Sampled: 01/09/19	
		Prepared: 01/10/19	
		Analyzed: 01/10/19	

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
1,1,2-Trichloroethane	<0.040	ug/L	0.020	<7.4 ppbv
1,1,1-Trichloroethane	<0.040	ug/L	0.020	<7.4 ppbv
Trichloroethylene (TCE)	0.37	ug/L	0.011	69 ppbv
Trichlorofluoromethane (R11)	<0.10	ug/L	0.050	<18 ppbv
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.100	ug/L	0.050	<13 ppbv
1,3,5-Trimethylbenzene	<0.020	ug/L	0.0098	<4.0 ppbv
1,2,4-Trimethylbenzene	<0.020	ug/L	0.0098	<4.0 ppbv
Vinyl acetate	<0.020	ug/L	0.0099	<5.6 ppbv
Vinyl chloride	<0.020	ug/L	0.01	<7.8 ppbv
o-Xylene	<0.020	ug/L	0.01	<4.6 ppbv
m,p-Xylenes	<0.020	ug/L	0.01	<4.6 ppbv
1,2,3-Trichloropropane	<0.024	ug/L	0.012	<4.0 ppbv
Surrogates			%REC	%REC Limits
4-Bromofluorobenzene			103 %	70-130

Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 2
Method: VOCs by GCMS EPA TO-15

SVE-VGACM-010919-0001

9A09015-02 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
Acetone	<0.100	ug/L	0.050	<42
Benzene	<0.019	ug/L	0.0096	<6.0
Benzyl chloride	<0.10	ug/L	0.050	<19
Bromodichloromethane	<0.10	ug/L	0.050	<15
Bromoform	<0.099	ug/L	0.050	<9.6
Bromomethane	<0.020	ug/L	0.010	<5.2
2-Butanone (MEK)	<0.10	ug/L	0.050	<34
Carbon Disulfide	<0.100	ug/L	0.050	<32
Carbon Tetrachloride	<0.026	ug/L	0.013	<4.2
Chlorobenzene	<0.020	ug/L	0.010	<4.4
Chloroethane	<0.020	ug/L	0.010	<7.6
Chloroform	<0.020	ug/L	0.0098	<4.0
Chloromethane	<0.020	ug/L	0.0099	<9.6
Dibromochloromethane	<0.039	ug/L	0.020	<4.6
1,2-Dibromoethane (EDB)	<0.040	ug/L	0.020	<5.2
1,2-Dichlorobenzene	<0.040	ug/L	0.020	<6.6
1,3-Dichlorobenzene	<0.040	ug/L	0.020	<6.6
1,4-Dichlorobenzene	<0.040	ug/L	0.020	<6.6
Dichlorodifluoromethane (R12)	<0.099	ug/L	0.049	<20
1,1-Dichloroethane	0.056	ug/L	0.0081	14
1,2-Dichloroethane (EDC)	<0.020	ug/L	0.010	<5.0

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 2
Method: VOCs by GCMS EPA TO-15

SVE-VGACM-010919-0001
9A09015-02 (Vapor)

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
cis-1,2-Dichloroethylene	0.16	ug/L	0.0079	41 ppbv
1,1-Dichloroethylene	0.024	ug/L	0.0079	6.1 ppbv
trans-1,2-Dichloroethylene	0.018	ug/L	0.0079	4.6 ppbv
1,2-Dichloropropane	<0.020	ug/L	0.010	<4.4 ppbv
trans-1,3-Dichloropropylene	<0.020	ug/L	0.01	<4.4 ppbv
cis-1,3-Dichloropropylene	<0.020	ug/L	0.01	<4.4 ppbv
Dichlorotetrafluoroethane	<0.10	ug/L	0.050	<14 ppbv
1,4-Dioxane	<0.020	ug/L	0.010	<5.6 ppbv
Ethylbenzene	<0.020	ug/L	0.01	<4.6 ppbv
4-Ethyltoluene	<0.020	ug/L	0.0098	<4.0 ppbv
Hexachlorobutadiene	<0.10	ug/L	0.050	<9.4 ppbv
2-Hexanone (MBK)	<0.098	ug/L	0.049	<24 ppbv
Isopropanol (IPA)	<0.20	ug/L	0.10	<82 ppbv
Methyl-tert-Butyl Ether (MTBE)	<0.020	ug/L	0.010	<5.6 ppbv
Methylene Chloride	<0.097	ug/L	0.049	<28 ppbv
4-Methyl-2-pentanone (MIBK)	<0.098	ug/L	0.049	<24 ppbv
Styrene	<0.020	ug/L	0.0098	<4.6 ppbv
1,1,2,2-Tetrachloroethane	<0.10	ug/L	0.050	<15 ppbv
Tetrachloroethylene (PCE)	0.23	ug/L	0.014	34 ppbv
Toluene	<0.098	ug/L	0.049	<26 ppbv
1,2,4-Trichlorobenzene	<0.040	ug/L	0.020	<5.4 ppbv

Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 2
Method: VOCs by GCMS EPA TO-15

SVE-VGACM-010919-0001

9A09015-02 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result	(ug/L)	MRL	Result	(ppbv)	MRL
1,1,2-Trichloroethane	<0.040	ug/L	0.020	<7.4	ppbv	3.7
1,1,1-Trichloroethane	<0.040	ug/L	0.020	<7.4	ppbv	3.7
Trichloroethylene (TCE)	0.24	ug/L	0.011	46	ppbv	2.0
Trichlorofluoromethane (R11)	<0.10	ug/L	0.050	<18	ppbv	8.9
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.100	ug/L	0.050	<13	ppbv	6.5
1,3,5-Trimethylbenzene	<0.020	ug/L	0.0098	<4.0	ppbv	2.0
1,2,4-Trimethylbenzene	<0.020	ug/L	0.0098	<4.0	ppbv	2.0
Vinyl acetate	<0.020	ug/L	0.0099	<5.6	ppbv	2.8
Vinyl chloride	<0.020	ug/L	0.01	<7.8	ppbv	3.9
o-Xylene	<0.020	ug/L	0.01	<4.6	ppbv	2.3
m,p-Xylenes	<0.020	ug/L	0.01	<4.6	ppbv	2.3
1,2,3-Trichloropropane	<0.024	ug/L	0.012	<4.0	ppbv	2.0
Surrogates						
4-Bromofluorobenzene	100 %			70-130		

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 0.25
Method: VOCs by GCMS EPA TO-15

SVE-VGACE-010919-0001

9A09015-03 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
Acetone	<0.012	ug/L	0.050	<5.2
Benzene	<0.0024	ug/L	0.0096	<0.75
Benzyl chloride	<0.013	ug/L	0.050	<2.4
Bromodichloromethane	<0.013	ug/L	0.050	<1.9
Bromoform	<0.012	ug/L	0.050	<1.2
Bromomethane	<0.0025	ug/L	0.010	<0.65
2-Butanone (MEK)	<0.013	ug/L	0.050	<4.2
Carbon Disulfide	<0.012	ug/L	0.050	<4.0
Carbon Tetrachloride	<0.0033	ug/L	0.013	<0.52
Chlorobenzene	<0.0025	ug/L	0.010	<0.55
Chloroethane	<0.0025	ug/L	0.010	<0.95
Chloroform	<0.0024	ug/L	0.0098	<0.50
Chloromethane	<0.0025	ug/L	0.0099	<1.2
Dibromochloromethane	<0.0049	ug/L	0.020	<0.58
1,2-Dibromoethane (EDB)	<0.005	ug/L	0.020	<0.65
1,2-Dichlorobenzene	<0.005	ug/L	0.020	<0.82
1,3-Dichlorobenzene	<0.005	ug/L	0.020	<0.82
1,4-Dichlorobenzene	<0.005	ug/L	0.020	<0.82
Dichlorodifluoromethane (R12)	<0.012	ug/L	0.049	<2.5
1,1-Dichloroethane	0.012	ug/L	0.0081	3.1
1,2-Dichloroethane (EDC)	0.0038	ug/L	0.010	0.93

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 0.25
Method: VOCs by GCMS EPA TO-15

SVE-VGACE-010919-0001

9A09015-03 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
cis-1,2-Dichloroethylene	0.033	ug/L	0.0079	8.3
1,1-Dichloroethylene	0.0057	ug/L	0.0079	1.4
trans-1,2-Dichloroethylene	0.0035	ug/L	0.0079	0.90
1,2-Dichloropropane	<0.0025	ug/L	0.010	<0.55
trans-1,3-Dichloropropylene	<0.0025	ug/L	0.01	<0.55
cis-1,3-Dichloropropylene	<0.0025	ug/L	0.01	<0.55
Dichlorotetrafluoroethane	<0.013	ug/L	0.050	<1.8
1,4-Dioxane	<0.0025	ug/L	0.010	<0.70
Ethylbenzene	<0.0025	ug/L	0.01	<0.58
4-Ethyltoluene	<0.0025	ug/L	0.0098	<0.50
Hexachlorobutadiene	<0.013	ug/L	0.050	<1.2
2-Hexanone (MBK)	<0.012	ug/L	0.049	<3.0
Isopropanol (IPA)	<0.025	ug/L	0.10	<10
Methyl-tert-Butyl Ether (MTBE)	<0.0025	ug/L	0.010	<0.70
Methylene Chloride	<0.012	ug/L	0.049	<3.5
4-Methyl-2-pentanone (MIBK)	<0.012	ug/L	0.049	<3.0
Styrene	<0.0024	ug/L	0.0098	<0.58
1,1,2,2-Tetrachloroethane	<0.013	ug/L	0.050	<1.8
Tetrachloroethylene (PCE)	<0.0034	ug/L	0.014	<0.50
Toluene	<0.012	ug/L	0.049	<3.2
1,2,4-Trichlorobenzene	<0.005	ug/L	0.020	<0.68

[Signature]
Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Matrix: Vapor
Dilution: 0.25
Method: VOCs by GCMS EPA TO-15

SVE-VGACE-010919-0001

9A09015-03 (Vapor)

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Sampled: 01/09/19
Prepared: 01/10/19
Analyzed: 01/10/19

Analyte	Result (ug/L)	MRL	Result (ppbv)	MRL
1,1,2-Trichloroethane	<0.005	ug/L	0.020	<0.92
1,1,1-Trichloroethane	<0.005	ug/L	0.020	<0.92
Trichloroethylene (TCE)	<0.0027	ug/L	0.011	<0.50
Trichlorofluoromethane (R11)	<0.013	ug/L	0.050	<2.2
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.012	ug/L	0.050	<1.6
1,3,5-Trimethylbenzene	<0.0025	ug/L	0.0098	<0.50
1,2,4-Trimethylbenzene	<0.0025	ug/L	0.0098	<0.50
Vinyl acetate	<0.0025	ug/L	0.0099	<0.70
Vinyl chloride	0.0035	ug/L	0.01	1.4
o-Xylene	<0.0025	ug/L	0.01	<0.58
m,p-Xylenes	<0.0025	ug/L	0.01	<0.58
1,2,3-Trichloropropane	<0.003	ug/L	0.012	<0.50
Surrogates			%REC	%REC Limits
4-Bromofluorobenzene			107 %	70-130

Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Method: VOCs by EPA TO-3 GC/MS

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19
Units: ppbv

Date Sampled:	01/09/19	Date Prepared:	01/09/19	Date Analyzed:	01/09/19
	01/10/19		01/10/19		01/10/19
	01/10/19		01/10/19		01/10/19
AA ID No:	9A09015-01	Client ID No:	9A09015-02	Client ID No:	9A09015-03
	SVE-VGACI-010		SVE-VGACM-0109		SVE-VGACE-010
	919-0001		19-0001		919-0001
Matrix:	Vapor		Vapor		Vapor
Dilution Factor:	1		1		1

TO-3 VOCs as Hexane (TO-3)

TN/MOC as Hexane

<1200 <1200 <1200

1200

Surrogates

4-Bromofluorobenzene

106% 102% 109%

%REC Limits
70-130

A handwritten signature in black ink, appearing to read 'Viorel Vasile'.

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 - Quality Control									

Batch B9A1421 - *** DEFAULT PREP ***

Blank (B9A1421-BLK1)

Prepared & Analyzed: 01/10/19

Acetone	<21	21	ppbv						
Benzene	<3.0	3.0	ppbv						
Benzyl chloride	<9.7	9.7	ppbv						
Bromodichloromethane	<7.5	7.5	ppbv						
Bromoform	<4.8	4.8	ppbv						
Bromomethane	<2.6	2.6	ppbv						
2-Butanone (MEK)	<17	17	ppbv						
Carbon Disulfide	<16	16	ppbv						
Carbon Tetrachloride	<2.1	2.1	ppbv						
Chlorobenzene	<2.2	2.2	ppbv						
Chloroethane	<3.8	3.8	ppbv						
Chloroform	<2.0	2.0	ppbv						
Chloromethane	<4.8	4.8	ppbv						
Dibromochloromethane	<2.3	2.3	ppbv						
1,2-Dibromoethane (EDB)	<2.6	2.6	ppbv						
1,2-Dichlorobenzene	<3.3	3.3	ppbv						
1,3-Dichlorobenzene	<3.3	3.3	ppbv						
1,4-Dichlorobenzene	<3.3	3.3	ppbv						
Dichlorodifluoromethane (R12)	<10	10	ppbv						
1,1-Dichloroethane	<2.0	2.0	ppbv						
1,2-Dichloroethane (EDC)	<2.5	2.5	ppbv						
cis-1,2-Dichloroethylene	<2.0	2.0	ppbv						
1,1-Dichloroethylene	<2.0	2.0	ppbv						
trans-1,2-Dichloroethylene	<2.0	2.0	ppbv						
1,2-Dichloropropane	<2.2	2.2	ppbv						
trans-1,3-Dichloropropylene	<2.2	2.2	ppbv						
cis-1,3-Dichloropropylene	<2.2	2.2	ppbv						
Dichlorotetrafluoroethane	<7.2	7.2	ppbv						
1,4-Dioxane	<2.8	2.8	ppbv						
Ethylbenzene	<2.3	2.3	ppbv						
4-Ethyltoluene	<2.0	2.0	ppbv						
Hexachlorobutadiene	<4.7	4.7	ppbv						

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

VOCs by GCMS EPA TO-15 - Quality Control
*Batch B9A1421 - *** DEFAULT PREP ****

Blank (B9A1421-BLK1) Continued

Prepared & Analyzed: 01/10/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Notes
2-Hexanone (MBK)										
Isopropanol (IPA)										
Methyl-tert-Butyl Ether (MTBE)	<41	41	ppbv							
Methylene Chloride	<2.8	2.8	ppbv							
4-Methyl-2-pentanone (MIBK)	<14	14	ppbv							
Styrene	<12	12	ppbv							
1,1,2,2-Tetrachloroethane	<2.3	2.3	ppbv							
Tetrachloroethylene (PCE)	<7.3	7.3	ppbv							
Toluene	<2.0	2.0	ppbv							
1,2,4-Trichlorobenzene	<13	13	ppbv							
1,1,1-Trichloroethane	<2.7	2.7	ppbv							
Trichloroethylene (TCE)	<3.7	3.7	ppbv							
Trichlorofluoromethane (R11)	<2.0	2.0	ppbv							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<8.9	8.9	ppbv							
1,3,5-Trimethylbenzene	<6.5	6.5	ppbv							
1,2,4-Trimethylbenzene	<2.0	2.0	ppbv							
Vinyl acetate	<2.0	2.0	ppbv							
Vinyl chloride	<2.8	2.8	ppbv							
o-Xylene	<3.9	3.9	ppbv							
m,p-Xylenes	<2.3	2.3	ppbv							
1,2,3-Trichloropropane	<2.0	2.0	ppbv							
Surrogate: 4-Bromofluorobenzene	19.6	ppbv	20	97.8	70-130	Prepared & Analyzed: 01/10/19				
LCS (B9A1421-B\$1)										
Acetone	38.2	21	ppbv	40	95.6	70-130	30			
Benzene	40.5	3.0	ppbv	40	101	70-130	30			
Benzyl chloride	44.6	9.7	ppbv	40	112	70-130	30			
Bromodichloromethane	43.3	7.5	ppbv	40	108	70-130	30			
Bromoform	43.5	4.8	ppbv	40	109	70-130	30			
Bromomethane	40.6	2.6	ppbv	40	101	70-130	30			

Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

VOCs by GCMS EPA TO-15 - Quality Control

Batch B9A1421 - *** DEFAULT PREP ***

LCS (B9A1421-BS1) Continued

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
Prepared & Analyzed: 01/10/19									
2-Butanone (MEK)	42.5	17	ppbv	40	106	70-130	30		
Carbon Disulfide	41.2	16	ppbv	40	103	70-130	30		
Carbon Tetrachloride	42.1	2.1	ppbv	40	105	70-130	30		
Chlorobenzene	40.4	2.2	ppbv	40	101	70-130	30		
Chloroethane	42.9	3.8	ppbv	40	107	70-130	30		
Chloroform	41.4	2.0	ppbv	40	103	70-130	30		
Chloromethane	46.7	4.8	ppbv	40	117	70-130	30		
Dibromochloromethane	43.1	2.3	ppbv	40	108	70-130	30		
1,2-Dibromoethane (EDB)	42.4	2.6	ppbv	40	106	70-130	30		
1,2-Dichlorobenzene	38.7	3.3	ppbv	40	96.8	70-130	30		
1,3-Dichlorobenzene	36.9	3.3	ppbv	40	92.2	70-130	30		
Dichlorodifluoromethane (R12)	39.2	3.3	ppbv	40	98.0	70-130	30		
1,1-Dichlorobenzene	38.0	10	ppbv	40	95.0	70-130	30		
1,1-Dichloroethane	40.2	2.0	ppbv	40	101	70-130	30		
1,2-Dichloroethane (EDC)	43.5	2.5	ppbv	40	109	70-130	30		
cis-1,2-Dichloroethylene	40.1	2.0	ppbv	40	100	70-130	30		
1,1-Dichloroethylene	41.9	2.0	ppbv	40	105	70-130	30		
trans-1,2-Dichloroethylene	41.6	2.0	ppbv	40	104	70-130	30		
1,2-Dichloropropane	42.1	2.2	ppbv	40	105	70-130	30		
trans-1,3-Dichloropropylene	43.5	2.2	ppbv	40	109	70-130	30		
cis-1,3-Dichloropropylene	42.6	2.2	ppbv	40	106	70-130	30		
Dichlorotetrafluoroethane	33.6	7.2	ppbv	40	84.0	70-130	30		
Ethylbenzene	37.9	2.3	ppbv	40	94.7	70-130	30		
4-Ethyltoluene	43.8	2.0	ppbv	40	110	70-130	30		
Hexachlorobutadiene	34.2	4.7	ppbv	40	85.5	70-130	30		
2-Hexanone (MBK)	43.9	12	ppbv	40	110	70-130	30		
Isopropanol (IPA)	46.1	41	ppbv	40	115	70-130	30		
Methylene Chloride	34.2	14	ppbv	40	85.4	70-130	30		
4-Methyl-2-pentanone (MIBK)	47.1	12	ppbv	40	118	70-130	30		
Styrene	39.8	2.3	ppbv	40	99.4	70-130	30		
1,1,2,2-Tetrachloroethane	37.3	7.3	ppbv	40	93.3	70-130	30		
Tetrachloroethylene (PCE)	38.9	2.0	ppbv	40	97.3	70-130	30		

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

VOCs by GCMS EPA TO-15 - Quality Control

Batch B9A1421 - *** DEFAULT PREP ***

LCS (B9A1421-BS1) Continued

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
Prepared & Analyzed: 01/10/19									
Toluene	41.0	13	ppbv	40	102	70-130	30		
1,2,4-Trichlorobenzene	32.8	2.7	ppbv	40	82.0	70-130	30		
1,1,2-Trichloroethane	42.2	3.7	ppbv	40	105	70-130	30		
1,1,1-Trichloroethane	42.3	3.7	ppbv	40	106	70-130	30		
Trichloroethylene (TCE)	35.6	2.0	ppbv	40	89.1	70-130	30		
Trichlorofluoromethane (R11)	42.9	8.9	ppbv	40	107	70-130	30		
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	40.8	6.5	ppbv	40	102	70-130	30		
1,3,5-Trimethylbenzene	39.9	2.0	ppbv	40	99.7	70-130	30		
1,2,4-Trimethylbenzene	38.0	2.0	ppbv	40	95.1	70-130	30		
Vinyl acetate	40.0	2.8	ppbv	40	100	70-130	30		
Vinyl chloride	43.9	3.9	ppbv	40	110	70-130	30		
o-Xylene	37.3	2.3	ppbv	40	93.3	70-130	30		
m,p-Xylenes	83.1	2.3	ppbv	80	104	70-130	30		
1,2,3-Trichloropropane	44.9	2.0	ppbv	40	112	70-130	30		
Surrogate: 4-Bromofluorobenzene 20.0 ppbv 20 99.8 70-130									
LCS Dup (B9A1421-BSD1)									
Acetone	39.1	21	ppbv	40	97.7	70-130	2.22	30	
Benzene	40.1	3.0	ppbv	40	100	70-130	0.893	30	
Benzyl chloride	45.8	9.7	ppbv	40	115	70-130	2.65	30	
Bromodichloromethane	43.3	7.5	ppbv	40	108	70-130	0.0462	30	
Bromoform	44.1	4.8	ppbv	40	110	70-130	1.28	30	
Bromomethane	39.9	2.6	ppbv	40	99.8	70-130	1.62	30	
2-Butanone (MEK)	41.1	17	ppbv	40	103	70-130	3.42	30	
Carbon Disulfide	40.5	16	ppbv	40	101	70-130	1.59	30	
Carbon Tetrachloride	42.0	2.1	ppbv	40	105	70-130	0.0951	30	
Chlorobenzene	39.8	2.2	ppbv	40	99.5	70-130	1.57	30	
Chloroethane	39.9	3.8	ppbv	40	99.8	70-130	7.13	30	
Chloroform	41.4	2.0	ppbv	40	103	70-130	0.00	30	
Chloromethane	38.0	4.8	ppbv	40	94.9	70-130	20.6	30	
Dibromochloromethane	43.8	2.3	ppbv	40	110	70-130	1.66	30	

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 - Quality Control										
<i>Batch B9A1421 - **** DEFAULT PREP ****</i>										
LCS Dup (B9A1421-BSD1) Continued										
							Prepared & Analyzed: 01/11/19			
1,2-Dibromoethane (EDB)	42.8	2.6	ppbv	40	107	70-130	0.798	30		
1,2-Dichlorobenzene	40.3	3.3	ppbv	40	101	70-130	3.92	30		
1,3-Dichlorobenzene	39.7	3.3	ppbv	40	99.2	70-130	7.32	30		
1,4-Dichlorobenzene	40.3	3.3	ppbv	40	101	70-130	2.84	30		
Dichlorodifluoromethane (R12)	36.7	10	ppbv	40	91.8	70-130	3.43	30		
1,2-Dichloroethane (EDC)	40.2	2.0	ppbv	40	100	70-130	0.224	30		
cis-1,2-Dichloroethylene	42.6	2.5	ppbv	40	107	70-130	2.14	30		
1,1-Dichloroethylene	39.5	2.0	ppbv	40	98.7	70-130	1.46	30		
trans-1,2-Dichloroethylene	40.8	2.0	ppbv	40	105	70-130	0.357	30		
1,2-Dichloropropane	41.5	2.2	ppbv	40	102	70-130	1.94	30		
trans-1,3-Dichloropropylene	42.7	2.2	ppbv	40	107	70-130	1.79	30		
cis-1,3-Dichloropropylene	42.2	2.2	ppbv	40	106	70-130	0.849	30		
Dichlortetrafluoroethane	32.7	7.2	ppbv	40	81.6	70-130	2.81	30		
Ethylbenzene	38.6	2.3	ppbv	40	96.4	70-130	1.75	30		
4-Ethyltoluene	41.8	2.0	ppbv	40	104	70-130	4.86	30		
Hexachlorobutadiene	37.2	4.7	ppbv	40	92.9	70-130	8.32	30		
2-Hexanone (MBK)	44.1	12	ppbv	40	110	70-130	0.568	30		
Isopropanol (IPA)	47.2	41	ppbv	40	118	70-130	2.33	30		
Methylene Chloride	33.3	14	ppbv	40	83.2	70-130	2.64	30		
4-Methyl-2-pentanone (MIBK)	47.6	12	ppbv	40	119	70-130	1.08	30		
Styrene	40.9	2.3	ppbv	40	102	70-130	2.75	30		
1,1,2,2-Tetrachloroethane	32.8	7.3	ppbv	40	82.1	70-130	12.8	30		
Tetrachloroethylene (PCE)	38.8	2.0	ppbv	40	97.0	70-130	0.257	30		
Toluene	40.8	13	ppbv	40	102	70-130	0.293	30		
1,2,4-Trichlorobenzene	36.2	2.7	ppbv	40	90.6	70-130	9.97	30		
1,1,2-Trichloroethane	42.2	3.7	ppbv	40	105	70-130	0.0237	30		
1,1,1-Trichloroethane	41.7	3.7	ppbv	40	104	70-130	1.33	30		
Trichloroethylene (TCE)	36.4	2.0	ppbv	40	91.0	70-130	2.05	30		
Trichlorofluoromethane (R11)	42.7	8.9	ppbv	40	107	70-130	0.607	30		
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	40.6	6.5	ppbv	40	102	70-130	0.319	30		

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 - Quality Control

Batch B9A1421 - *** DEFAULT PREP ***

LCS Dup (B9A1421-BSD1) Continued					Prepared & Analyzed: 01/11/19				
1,3,5-Trimethylbenzene	40.9	2.0	ppbv	40	102	70-130	2.50	30	
1,2,4-Trimethylbenzene	40.0	2.0	ppbv	40	100	70-130	5.02	30	
Vinyl acetate	40.2	2.8	ppbv	40	100	70-130	0.274	30	
Vinyl chloride	43.4	3.9	ppbv	40	108	70-130	1.26	30	
o-Xylene	37.6	2.3	ppbv	40	93.9	70-130	0.668	30	
m,p-Xylenes	83.8	2.3	ppbv	80	105	70-130	0.755	30	
1,2,3-Trichloropropane	44.9	2.0	ppbv	40	112	70-130	0.0445	30	
Surrogate: 4-Bromofluorobenzene	20.2		ppbv	20	101	70-130			

VOCs by EPA TO-3 GC/MS - Quality Control

Batch B9A1552 - *** DEFAULT PREP ***

Blank (B9A1552-BLK1)

Prepared & Analyzed: 01/10/19

TNOC as Hexane	<1200	1200	ppbv						
Surrogate: 4-Bromofluorobenzene	4.91		ppbv	5.0	98.2	70-130			
LCS (B9A1552-BS1)					Prepared & Analyzed: 01/11/19				
GRO as Hexane	178	1200	ppbv	200	89.1	70-130			30
Surrogate: 4-Bromofluorobenzene	5.05		ppbv	5.0	101	70-130			
LCS Dup (B9A1552-BSD1)	178	1200	ppbv	200	88.9	70-130	0.208	30	
GRO as Hexane	5.14		ppbv	5.0	103	70-130			
Surrogate: 4-Bromofluorobenzene									

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874340
Date Received: 01/09/19
Date Reported: 01/18/19

Special Notes

Viorel Vasile
Operations Manager



AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311

Tel: 818-998-5547 FAX: 818-998-7258

Client: Hale, Aldrich & Associates, Inc.

Project Name / No.: COOPER DRUM

A.A. COC No.: 11373

70054044

Page 1 of 1

Project Manager: Chris Tsatsas / Matt Hillman

Site Address: 9313 Rayd Ave

Sampler's Name:

Alegre Feijo

Phone: 314-371-1820 / 314-392-5420

City: Springfield

Sampler's Signature:

Alex Fehrs

Fax: 949-453-1047

State & Zip: CA

Quote No.:

141

Codes ***

① Samle Day Rus

E = E_D - E_A

③ = 48 Hour Rush

3 Day Rush

ANALYSIS REQUESTED (Test Name)

**Special
Instructions**

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.

ATTACHMENT B

Groundwater Treatment System Laboratory Analytical Report



9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

January 18, 2019

Peter Bennett
Haley & Aldrich (Oakland)
1956 Webster St., Suite 450
Oakland, CA 94612

Re : Cooper Drum - South Gate / 130072-015-1
A874341 / 9A09016

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 01/09/19 14:53 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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8260B

EW-INF-010919-0001	9A09016-01	Water	5	01/09/19 12:05	01/09/19 14:53
TOTAL-EFF-010919-0001	9A09016-02	Water	5	01/09/19 11:55	01/09/19 14:53

8270CM 1,4-Dioxane Only

EW-INF-010919-0001	9A09016-01	Water	5	01/09/19 12:05	01/09/19 14:53
TOTAL-EFF-010919-0001	9A09016-02	Water	5	01/09/19 11:55	01/09/19 14:53

A handwritten signature in black ink, appearing to read "Viorel Vasile".

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Method: EPA 8270CM 1,4-Dioxane

AA I.D. No. **Client I.D. No.** **Sampled** **Prepared** **Analyzed** **Dilution** **Result** **Units** **MDL** **MRL**

8270CM 1,4-Dioxane Only (EPA 8270CM)

9A09016-01	EW-INF-010919-00	01/09/19	01/01/19	01/11/19	1	8.5	ug/L	1	2
9A09016-02	TOTAL-EFF-01091 9-0001	01/09/19	01/01/19	01/11/19	1	8.4	ug/L	1	2

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Method: VOCs by GC/MS

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19
Units: ug/L

Date Sampled:	01/09/19	Date Prepared:	01/09/19
Date Analyzed:	01/11/19	AA ID No:	9A09016-01
Client ID No:	EW-INF-010919-	Matrix:	9A09016-02
Matrix:	0001	Dilution Factor:	1
	Water		Water

	MDL	MRL
Acetone	<2.0	<2.0
Benzene	1.8	1.5
Bromobenzene	<0.30	<0.30
Bromodichloromethane	<0.50	<0.50
Bromoform	<0.20	<0.20
Bromomethane	<0.50	<0.50
2-Butanone (MEK)	<0.50	<0.50
tert-Butylbenzene	<2.0	<2.0
n-Butylbenzene	<0.20	<0.20
sec-Butylbenzene	<0.20	<0.20
Carbon Disulfide	<0.30	<0.30
Carbon Tetrachloride	<0.30	<0.30
Chlorobenzene	<0.30	<0.30
Chloroethane	<0.50	<0.50
Chloroform	<0.30	<0.30
Chloromethane	<0.40	<0.40
4-Chlorotoluene	<0.20	<0.20
2-Chlorotoluene	<0.30	<0.30
1,2-Dibromo-3-chloropropane	<0.40	<0.40
Dibromochloromethane	<0.30	<0.30
1,2-Dibromoethane (EDB)	<0.30	<0.30
Dibromomethane	<0.40	<0.40
1,3-Dichlorobenzene	<0.10	<0.10
1,4-Dichlorobenzene	<0.30	<0.30
1,2-Dichlorobenzene	<0.30	<0.30

Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Method: VOCs by GC/MS

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19
Units: ug/L

Date Sampled:	01/09/19	Date Prepared:	01/09/19
Date Analyzed:	01/11/19	AA ID No:	9A09016-01
Client ID No:	EW-INF-010919- TOTAL-EFF-01091	Matrix:	Water
Matrix:	0001	Dilution Factor:	1
	9-0001		1

8260B (EPA 8260B) (continued)

		MDL	MRL
Dichlorodifluoromethane (R12)	<0.50	<0.50	0.50
1,1-Dichloroethane	1.9	1.4	0.20
1,2-Dichloroethane (EDC)	2.5	1.7	0.30
cis-1,2-Dichloroethylene	40	31	0.20
1,1-Dichloroethylene	0.86	0.60	0.30
trans-1,2-Dichloroethylene	5.3	3.5	0.50
1,3-Dichloropropane	<0.10	<0.10	0.10
1,2-Dichloropropane	<0.50	<0.50	0.50
2,2-Dichloropropane	<0.40	<0.40	0.40
trans-1,3-Dichloropropylene	<0.20	<0.20	0.20
1,1-Dichloropropylene	<0.20	<0.20	0.20
cis-1,3-Dichloropropylene	<0.20	<0.20	0.20
Ethylbenzene	<0.20	<0.20	0.20
Hexachlorobutadiene	<0.40	<0.40	0.40
2-Hexanone (MBK)	<2.0	<2.0	2.0
Isopropylbenzene	<0.20	<0.20	0.20
4-Isopropyltoluene	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<1.7	<1.7	1.7
Methylene Chloride	<5.0	<5.0	5.0
Naphthalene	<0.70	<0.70	0.70
n-Propylbenzene	<0.20	<0.20	0.20
Styrene	<0.20	<0.20	0.20
1,1,1,2-Tetrachloroethane	<0.40	<0.40	0.40
1,1,2,2-Tetrachloroethane	<0.30	<0.30	0.30
Tetrachloroethylene (PCE)	<0.50	<0.50	0.50

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate
Method: VOCs by GC/MS

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19
Units: ug/L

Date Sampled:	01/09/19	Date Analyzed:	01/09/19
Date Prepared:	01/11/19	AA ID No:	01/11/19
Client ID No:	EW-INF-010919- TOTAL-EFF-01091	AA ID No:	9A09016-01
Matrix:	Water	Matrix:	Water
Dilution Factor:	1	Dilution Factor:	1

8260B (EPA 8260B) (continued)

		MDL	MRL
Toluene	<0.30	<0.30	0.30
1,2,4-Trichlorobenzene	<0.20	<0.20	0.20
1,2,3-Trichlorobenzene	<0.20	<0.20	0.50
1,1,2-Trichloroethane	<0.30	<0.30	0.30
1,1,1-Trichloroethane	<0.30	<0.30	0.50
Trichloroethylene (TCE)	2.3	1.6	0.20
Trichlorofluoromethane (R11)	<0.20	<0.20	0.50
1,2,3-Trichloropropane	<0.30	<0.30	0.20
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.30	<0.30	0.50
1,2,4-Trimethylbenzene	<0.30	<0.30	0.30
1,3,5-Trimethylbenzene	<0.20	<0.20	0.50
Vinyl chloride	<0.50	<0.50	0.50
o-Xylene	<0.30	<0.30	0.30
m,p-Xylenes	<0.40	<0.40	0.40

Surrogates

	%REC	Limits
4-Bromofluorobenzene	116%	70-140
Dibromofluoromethane	136%	70-140
Toluene-d8	103%	70-140

Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Notes
EPA 8270CM 1,4-Dioxane - Quality Control									
<i>Batch B9A1004 - EPA 3510C_MS</i>									
Blank (B9A1004-BLK1)									
1,4-Dioxane	<1.0	1.0	ug/L			Prepared: 01/10/19 Analyzed: 01/11/19			
LCS (B9A1004-BS1)						Prepared: 01/10/19 Analyzed: 01/11/19			
1,4-Dioxane	10.5	1.0	ug/L	10	105	75-125			
LCS Dup (B9A1004-BSD1)						Prepared: 01/10/19 Analyzed: 01/11/19			
1,4-Dioxane	12.4	1.0	ug/L	10	124	75-125	16.1	30	

VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Blank (B9A1106-BLK1)

Prepared & Analyzed: 01/11/19

Acetone	<2.0	2.0	ug/L						
Benzene	<0.20	0.20	ug/L						
Bromobenzene	<0.30	0.30	ug/L						
Bromoform	<0.50	0.50	ug/L						
Bromomethane	<0.20	0.20	ug/L						
Bromodichloromethane	<0.20	0.20	ug/L						
2-Butanone (MEK)	<0.50	0.50	ug/L						
2-Butylbenzene	<2.0	2.0	ug/L						
tert-Butylbenzene	<0.20	0.20	ug/L						
n-Butylbenzene	<0.20	0.20	ug/L						
sec-Butylbenzene	<0.20	0.20	ug/L						
Carbon Disulfide	<0.30	0.30	ug/L						
Carbon Tetrachloride	<0.30	0.30	ug/L						
Chlorobenzene	<0.30	0.30	ug/L						
Chloroethane	<0.50	0.50	ug/L						
Chloroform	<0.30	0.30	ug/L						
Chloromethane	<0.40	0.40	ug/L						
4-Chlorotoluene	<0.20	0.20	ug/L						
2-Chlorotoluene	<0.30	0.30	ug/L						
1,2-Dibromo-3-chloropropane	<0.40	0.40	ug/L						
Dibromochloromethane	<0.30	0.30	ug/L						
1,2-Dibromoethane (EDB)	<0.30	0.30	ug/L						
Dibromomethane	<0.40	0.40	ug/L						

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result %REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Blank (B9A1106-BLK1) Continued

Prepared & Analyzed: 01/11/19

1,3-Dichlorobenzene	<0.10	0.10	ug/L						
1,4-Dichlorobenzene	<0.30	0.30	ug/L						
1,2-Dichlorobenzene	<0.30	0.30	ug/L						
Dichlorodifluoromethane (R12)	<0.50	0.50	ug/L						
1,1-Dichloroethane	<0.20	0.20	ug/L						
1,2-Dichloroethane (EDC)	<0.30	0.30	ug/L						
cis-1,2-Dichloroethylene	<0.20	0.20	ug/L						
1,1-Dichloroethylene	<0.30	0.30	ug/L						
trans-1,2-Dichloroethylene	<0.40	0.40	ug/L						
1,3-Dichloropropane	<0.10	0.10	ug/L						
1,2-Dichloropropane	<0.50	0.50	ug/L						
2,2-Dichloropropane	<0.40	0.40	ug/L						
trans-1,3-Dichloropropylene	<0.20	0.20	ug/L						
cis-1,3-Dichloropropylene	<0.20	0.20	ug/L						
Ethylbenzene	<0.20	0.20	ug/L						
Hexachlorobutadiene	<0.40	0.40	ug/L						
2-Hexanone (MVK)	<2.0	2.0	ug/L						
Isopropylbenzene	<0.20	0.20	ug/L						
4-Isopropyltoluene	<0.20	0.20	ug/L						
Methyl-tert-Butyl Ether (MTBE)	<1.7	1.7	ug/L						
Methylene Chloride	<5.0	5.0	ug/L						
4-Methyl-2-pentanone (MIBK)	<0.70	0.70	ug/L						
Naphthalene	<0.20	0.20	ug/L						
n-Propylbenzene	<0.20	0.20	ug/L						
Styrene	<0.20	0.20	ug/L						
1,1,1,2-Tetrachloroethane	<0.40	0.40	ug/L						
1,1,2,2-Tetrachloroethane	<0.30	0.30	ug/L						
Tetrachloroethylene (PCE)	<0.50	0.50	ug/L						
Toluene	<0.30	0.30	ug/L						
1,2,4-Trichlorobenzene	<0.20	0.20	ug/L						
1,2,3-Trichlorobenzene	<0.20	0.20	ug/L						

Viorel Vasile

Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Blank (B9A1106-BLK1) Continued

Prepared & Analyzed: 01/11/19

1,1,2-Trichloroethane	<0.30	0.30	ug/L						
1,1,1-Trichloroethane	<0.30	0.30	ug/L						
Trichloroethylene (TCE)	<0.20	0.20	ug/L						
Trichlorofluoromethane	<0.20	0.20	ug/L						
1,2,3-Trichloropropane	<0.30	0.30	ug/L						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.30	0.30	ug/L						
1,2,4-Trimethylbenzene	<0.30	0.30	ug/L						
1,3,5-Trimethylbenzene	<0.20	0.20	ug/L						
Vinyl chloride	<0.50	0.50	ug/L						
o-Xylene	<0.30	0.30	ug/L						
m,p-Xylenes	<0.40	0.40	ug/L						

Surrogate: 4-Bromofluorobenzene

Prepared & Analyzed: 01/11/19

Benzene	49.4	ug/L	50	98.9	70-140				
Bromobenzene	45.3	ug/L	50	90.6	70-140				

Surrogate: Dibromofluoromethane

Prepared & Analyzed: 01/11/19

Toluene-d8	49.5	ug/L	50	99.0	70-140				
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LCS (B9A1106-BS1)

Acetone	17.0	2.0	ug/L	20	85.2	50-150			
Benzene	16.0	0.20	ug/L	20	80.0	75-125			
Bromobenzene	21.8	0.30	ug/L	20	109	50-150			
Bromoform	17.3	0.50	ug/L	20	86.6	50-150			
Bromochloromethane	18.1	0.20	ug/L	20	90.5	75-125			
Bromomethane	18.8	0.50	ug/L	20	94.2	75-125			
2-Butanone (MEK)	28.6	0.50	ug/L	20	143	75-125			
tert-Butylbenzene	19.5	2.0	ug/L	20	97.5	50-150			
n-Butylbenzene	22.8	0.20	ug/L	20	114	50-150			
sec-Butylbenzene	22.6	0.20	ug/L	20	113	50-150			
Carbon Disulfide	23.0	0.20	ug/L	20	115	50-150			
Carbon Tetrachloride	15.2	0.30	ug/L	20	76.0	50-150			
Chlorobenzene	20.0	0.30	ug/L	20	100	75-125			
Chloroethane	22.2	0.30	ug/L	20	111	75-125			
	19.1	0.50	ug/L	20	95.6	75-125			

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Notes
VOCs by GC/MS - Quality Control										
<i>Batch B9A1106 - EPA 5030B</i>										
LCS (B9A1106-BS1) Continued										
Prepared & Analyzed: 01/11/19										
Chloroform	18.4	0.30	ug/L	20	92.0	75-125				
Chloromethane	23.3	0.40	ug/L	20	116	65-125				
4-Chlorotoluene	21.7	0.20	ug/L	20	108	65-125				
2-Chlorotoluene	22.8	0.30	ug/L	20	114	65-125				
1,2-Dibromo-3-chloropropane	16.6	0.40	ug/L	20	83.0	65-125				
Dibromochloromethane	20.0	0.30	ug/L	20	99.8	75-125				
1,2-Dibromoethane (EDB)	18.1	0.30	ug/L	20	90.3	65-125				
Dibromomethane	15.9	0.40	ug/L	20	79.7	65-125				
1,3-Dichlorobenzene	21.7	0.10	ug/L	20	108	65-125				
1,4-Dichlorobenzene	21.8	0.30	ug/L	20	109	75-125				
1,2-Dichlorobenzene	22.0	0.30	ug/L	20	110	65-125				
Dichlorodifluoromethane (R12)	23.1	0.50	ug/L	20	90.9	70-125				
1,1-Dichloroethane (EDC)	18.2	0.20	ug/L	20	97.0	75-125				
cis-1,2-Dichloroethylene	19.4	0.30	ug/L	20	83.7	75-125				
1,1-Dichloroethylene	16.7	0.20	ug/L	20	86.6	70-130				
trans-1,2-Dichloroethylene	17.3	0.30	ug/L	20	81.2	75-125				
1,3-Dichloropropene	16.2	0.40	ug/L	20	93.2	65-125				
1,2-Dichloropropene	18.6	0.10	ug/L	20	89.6	75-130				
2,2-Dichloropropene	17.9	0.50	ug/L	20	93.8	65-125				
trans-1,3-Dichloropropylene	18.8	0.40	ug/L	20	98.0	65-125				
1,1-Dichloropropylene	19.6	0.20	ug/L	20	95.5	65-125				
cis-1,3-Dichloropropylene	19.1	0.20	ug/L	20	88.8	75-125				
Ethylbenzene	17.8	0.20	ug/L	20	112	75-125				
Hexachlorobutadiene	22.5	0.20	ug/L	20	115	65-125				
2-Hexanone (MBK)	23.0	0.40	ug/L	20	77.4	65-125				
Isopropylbenzene	15.5	2.0	ug/L	20	112	65-125				
4-Isopropyltoluene	22.4	0.20	ug/L	20	117	65-125				
Methyl-tert-Butyl Ether (MTBE)	23.3	0.20	ug/L	20	81.9	75-125				
Methylene Chloride	32.8	1.7	ug/L	40	59.0	75-130				
4-Methyl-2-pentanone (MIBK)	11.8	5.0	ug/L	20	94.4	65-125				
Naphthalene	18.9	0.70	ug/L	20	87.4	65-125				

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

LCS (B9A1106-BS1) Continued

Prepared & Analyzed: 01/11/19

n-Propylbenzene	22.8	0.20	ug/L	20	114	65-125			
Styrene	22.4	0.20	ug/L	20	112	65-125			
1,1,1,2-Tetrachloroethane	21.8	0.40	ug/L	20	109	65-125			
1,1,2,2-Tetrachloroethane	15.7	0.30	ug/L	20	78.3	70-135			
Tetrachloroethylene (PCE)	21.8	0.50	ug/L	20	109	75-125			
Toluene	21.1	0.30	ug/L	20	106	75-125			
1,2,3-Trichlorobenzene	19.8	0.20	ug/L	20	98.8	65-125			
1,1,2-Trichloroethane	17.9	0.30	ug/L	20	89.7	75-125			
1,1,1-Trichloroethane	20.4	0.30	ug/L	20	102	75-125			
Trichloroethylene (TCE)	18.2	0.20	ug/L	20	91.2	75-125			
Trichlorofluoromethane (R11)	19.6	0.20	ug/L	20	98.2	65-125			
1,2,3-Trichloropropane	18.0	0.30	ug/L	20	89.9	65-125			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	15.3	0.30	ug/L	20	76.4	65-125			
1,2,4-Trimethylbenzene	22.6	0.30	ug/L	20	113	65-125			
1,3,5-Trimethylbenzene	22.8	0.20	ug/L	20	114	65-125			
Vinyl chloride	22.5	0.50	ug/L	20	113	75-125			
o-Xylene	21.7	0.30	ug/L	20	109	75-125			
m,p-Xylenes	43.6	0.40	ug/L	40	109	65-125			
Surrogate: 4-Bromofluorobenzene	47.9		ug/L	50	95.9	70-140			
Surrogate: Dibromofluoromethane	43.8		ug/L	50	87.7	70-140			
Surrogate: Toluene-d8	49.6		ug/L	50	99.1	70-140			
Matrix Spike (B9A1106-MS1)									
Acetone	19.9	2.0	ug/L	20	99.5	50-150			
Benzene	19.4	0.20	ug/L	20	96.9	70-130			
Bromobenzene	20.0	0.30	ug/L	20	100	50-150			
Bromochloromethane	20.3	0.50	ug/L	20	102	50-150			
Bromodichloromethane	23.0	0.20	ug/L	20	115	50-150			
Bromoform	21.3	0.50	ug/L	20	106	70-130			
Bromomethane	22.8	0.50	ug/L	20	114	50-150			
2-Butanone (MEK)	19.2	2.0	ug/L	20	96.2	50-150			

Source: 9A08011-01 Prepared & Analyzed: 01/11/19

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Operations Manager



LABORATORY ANALYSIS RESULTS

Client: Haley & Aldrich (Oakland)
Project No: 130072-015-1
Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Matrix Spike (B9A1106-MS1) Continued Source: 9A08011-01 Prepared & Analyzed: 01/11/19

tert-Butylbenzene	22.4	0.20	ug/L	20	112	50-150			
n-Butylbenzene	23.1	0.20	ug/L	20	115	50-150			
sec-Butylbenzene	23.0	0.20	ug/L	20	115	50-150			
Carbon Disulfide	17.6	0.30	ug/L	20	88.0	50-150			
Carbon Tetrachloride	24.2	0.30	ug/L	20	121	50-150			
Chlorobenzene	22.8	0.30	ug/L	20	114	70-130			
Chloroethane	21.4	0.50	ug/L	20	107	50-150			
Chloroform	20.0	0.30	ug/L	20	99.8	70-130			
Chloromethane	36.4	0.40	ug/L	20	182	50-150			
4-Chlorotoluene	21.5	0.20	ug/L	20	108	50-150			
2-Chlorotoluene	23.0	0.30	ug/L	20	115	50-150			
1,2-Dibromo-3-chloropropane	18.9	0.40	ug/L	20	94.6	50-150			
Dibromochloromethane	22.1	0.30	ug/L	20	110	50-150			
1,2-Dibromoethane (EDB)	21.1	0.30	ug/L	20	106	50-150			
Dibromomethane	20.3	0.40	ug/L	20	101	50-150			
1,3-Dichlorobenzene	21.2	0.10	ug/L	20	106	50-150			
1,4-Dichlorobenzene	21.5	0.30	ug/L	20	108	50-150			
1,2-Dichlorobenzene	21.8	0.30	ug/L	20	109	50-150			
Dichlorodifluoromethane (R12)	26.0	0.50	ug/L	20	130	50-150			
1,1-Dichloroethane	19.4	0.20	ug/L	20	97.2	70-130			
1,2-Dichloroethane (EDC)	23.9	0.30	ug/L	20	119	50-150			
cis-1,2-Dichloroethylene	18.2	0.20	ug/L	20	90.8	70-130			
1,1-Dichloroethylene	18.9	0.30	ug/L	20	94.5	70-130			
trans-1,2-Dichloroethylene	16.9	0.40	ug/L	20	84.4	50-150			
1,3-Dichloropropene	21.2	0.10	ug/L	20	106	50-150			
1,2-Dichloropropane	22.9	0.50	ug/L	20	114	70-130			
2,2-Dichloropropane	21.9	0.40	ug/L	20	110	50-150			
trans-1,3-Dichloropropylene	21.3	0.20	ug/L	20	107	50-150			
1,1-Dichloropropylene	22.1	0.20	ug/L	20	111	50-150			
cis-1,3-Dichloropropylene	21.7	0.20	ug/L	20	109	50-150			
Ethylbenzene	23.2	0.20	ug/L	20	116	70-130			
Hexachlorobutadiene	20.5	0.40	ug/L	20	103	50-150			

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Operations Manager



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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	RPD	RPD Limit	Notes
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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Matrix Spike (B9A1106-MS1) Continued Source: 9A08011-01 Prepared & Analyzed: 01/11/19

2-Hexanone (MBK)	18.9	2.0	ug/L	20	94.6	50-150			
Isopropylbenzene	21.6	0.20	ug/L	20	108	50-150			
4-Isopropyltoluene	23.0	0.20	ug/L	20	115	50-150			
Methyl-tert-Butyl Ether (MTBE)	39.6	1.7	ug/L	40	98.9	70-130			
Methylene Chloride	16.8	5.0	ug/L	20	84.2	50-150			
4-Methyl-2-pentanone (MIBK)	24.4	0.70	ug/L	20	122	50-150			
Naphthalene	18.0	0.20	ug/L	20	89.9	50-150			
n-Propylbenzene	22.2	0.20	ug/L	20	111	70-130			
Styrene	23.8	0.20	ug/L	20	119	50-150			
1,1,1,2-Tetrachloroethane	21.5	0.40	ug/L	20	107	50-150			
1,1,2,2-Tetrachloroethane	20.8	0.30	ug/L	20	104	50-150			
Tetrachloroethylene (PCE)	19.9	0.50	ug/L	20	99.5	70-130			
Toluene	21.9	0.30	ug/L	20	110	70-130			
1,2,3-Trichlorobenzene	18.3	0.20	ug/L	20	91.7	50-150			
1,1,2-Trichloroethane	20.1	0.30	ug/L	20	101	50-150			
1,1,1-Trichloroethane	24.4	0.30	ug/L	20	122	70-130			
Trichloroethylene (TCE)	22.2	0.20	ug/L	20	111	70-130			
Trichlorofluoromethane (R11)	16.4	0.20	ug/L	20	82.2	50-150			
1,2,3-Trichloropropane	22.8	0.30	ug/L	20	114	50-150			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	17.9	0.30	ug/L	20	89.6	50-150			
1,2,4-Trimethylbenzene	22.4	0.30	ug/L	20	112	50-150			
1,3,5-Trimethylbenzene	22.1	0.20	ug/L	20	110	70-130			
Vinyl chloride	30.0	0.50	ug/L	20	150	70-130			
o-Xylene	23.3	0.30	ug/L	20	116	50-150			
m,p-Xylenes	45.8	0.40	ug/L	40	114	50-150			
Surrogate: 4-Bromofluorobenzene	49.4		ug/L	50	98.8	70-140			
Surrogate: Dibromofluoromethane	49.3		ug/L	50	98.6	70-140			
Surrogate: Toluene-d8	51.6		ug/L	50	103	70-140			
Matrix Spike Dup (B9A1106-MSD1)	Source: 9A08011-01	Prepared & Analyzed: 01/11/19							
Acetone	23.0	2.0	ug/L	20	115	50-150	14.3	30	

Viorel Vasile
Operations Manager



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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Matrix Spike Dup (B9A1106-MSD1)

Continued

Benzene	18.2	0.20	ug/L	20	90.8	70-130	6.55	30	
Bromobenzene	21.3	0.30	ug/L	20	107	50-150	6.24	30	
Bromoform	19.3	0.50	ug/L	20	96.7	50-150	4.89	30	
Bromochloromethane	20.6	0.20	ug/L	20	103	50-150	10.7	30	
Bromomethane	21.0	0.50	ug/L	20	105	70-130	1.61	30	
2-Butanone (MEK)	28.4	0.50	ug/L	20	142	50-150	21.8	30	
tert-Butylbenzene	20.1	2.0	ug/L	20	100	50-150	4.22	30	
n-Butylbenzene	22.5	0.20	ug/L	20	112	50-150	0.401	30	
Carbon Tetrachloride	23.0	0.20	ug/L	20	115	50-150	0.434	30	
sec-Butylbenzene	23.2	0.20	ug/L	20	116	50-150	0.692	30	
Carbon Disulfide	17.4	0.30	ug/L	20	87.0	50-150	1.26	30	
Chloroethane	22.0	0.30	ug/L	20	110	50-150	9.69	30	
Chlorobenzene	22.3	0.30	ug/L	20	111	70-130	2.26	30	
Chloroform	22.0	0.50	ug/L	20	110	50-150	2.72	30	
Chloromethane	19.2	0.30	ug/L	20	95.8	70-130	4.04	30	**
4-Chlorotoluene	42.1	0.40	ug/L	20	211	50-150	14.4	30	
2-Chlorotoluene	22.3	0.20	ug/L	20	112	50-150	3.70	30	
1,2-Dibromo-3-chloropropane	23.0	0.30	ug/L	20	115	50-150	0.00	30	
Dibromochloromethane	21.0	0.40	ug/L	20	105	50-150	10.3	30	
1,2-Dibromoethane (EDB)	20.3	0.30	ug/L	20	108	50-150	2.61	30	
Dibromomethane	21.5	0.30	ug/L	20	102	50-150	3.91	30	
1,3-Dichlorobenzene	18.6	0.40	ug/L	20	92.8	50-150	8.91	30	
1,4-Dichlorobenzene	21.9	0.10	ug/L	20	109	50-150	3.06	30	
1,2-Dichlorobenzene	22.0	0.30	ug/L	20	110	50-150	2.48	30	
Dichlorodifluoromethane (R12)	22.4	0.30	ug/L	20	112	50-150	2.40	30	
1,1-Dichloroethane	26.4	0.50	ug/L	20	132	50-150	1.30	30	
1,2-Dichloroethane (EDC)	19.2	0.20	ug/L	20	95.8	70-130	1.40	30	
cis-1,2-Dichloroethylene	21.6	0.30	ug/L	20	108	50-150	10.2	30	
1,1-Dichloroethylene	17.9	0.20	ug/L	20	89.6	70-130	1.27	30	
trans-1,2-Dichloroethylene	19.0	0.30	ug/L	20	94.9	70-130	0.422	30	
	16.6	0.40	ug/L	20	82.8	50-150	1.92	30	

Viorel Vasile
Operations Manager



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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Matrix Spike Dup (B9A1106-MSD1)

Continued

1,3-Dichloropropane	21.3	0.10	ug/L	20	107	50-150	0.470	30
1,2-Dichloropropane	21.2	0.50	ug/L	20	106	70-130	7.85	30
2,2-Dichloropropane	21.1	0.40	ug/L	20	106	50-150	3.58	30
trans-1,3-Dichloropropylene	21.3	0.20	ug/L	20	106	50-150	0.329	30
1,1-Dichloropropylene	21.2	0.20	ug/L	20	106	50-150	4.43	30
cis-1,3-Dichloropropylene	20.0	0.20	ug/L	20	100	50-150	8.29	30
Ethylbenzene	22.6	0.20	ug/L	20	113	70-130	2.66	30
Hexachlorobutadiene	21.5	0.40	ug/L	20	107	50-150	4.57	30
2-Hexanone (MBK)	19.6	2.0	ug/L	20	98.1	50-150	3.58	30
Isopropylbenzene	21.5	0.20	ug/L	20	107	50-150	0.558	30
4-Isopropyltoluene	23.0	0.20	ug/L	20	115	50-150	0.130	30
Methyl-tert-Butyl Ether (MTBE)	38.6	1.7	ug/L	40	96.4	70-130	2.51	30
Methylene Chloride	15.4	5.0	ug/L	20	77.0	50-150	8.87	30
4-Methyl-2-pentanone (MIBK)	25.7	0.70	ug/L	20	128	50-150	5.11	30
Naphthalene	19.7	0.20	ug/L	20	98.4	50-150	8.98	30
n-Propylbenzene	23.0	0.20	ug/L	20	115	70-130	3.19	30
Styrene	23.0	0.20	ug/L	20	115	50-150	3.46	30
1,1,1,2-Tetrachloroethane	21.5	0.40	ug/L	20	108	50-150	0.233	30
1,1,2,2-Tetrachloroethane	20.3	0.30	ug/L	20	101	50-150	2.34	30
Tetrachloroethylene (PCE)	19.6	0.50	ug/L	20	98.2	70-130	1.26	30
Toluene	21.0	0.30	ug/L	20	105	70-130	4.28	30
1,2,3-Trichlorobenzene	20.0	0.20	ug/L	20	100	50-150	8.66	30
1,1,2-Trichloroethane	20.5	0.30	ug/L	20	102	50-150	1.73	30
1,1,1-Trichloroethane	22.5	0.30	ug/L	20	112	70-130	8.14	30
Trichloroethylene (TCE)	20.4	0.20	ug/L	20	102	70-130	8.26	30
Trichlorofluoromethane (R11)	20.1	0.20	ug/L	20	101	50-150	20.1	30
1,2,3-Trichloropropane	22.4	0.30	ug/L	20	112	50-150	1.90	30
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	16.7	0.30	ug/L	20	83.3	50-150	7.34	30
1,2,4-Trimethylbenzene	22.9	0.30	ug/L	20	114	50-150	2.39	30
1,3,5-Trimethylbenzene	22.4	0.20	ug/L	20	112	70-130	1.48	30

Viorel Vasile
Operations Manager



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VOCs by GC/MS - Quality Control

Batch B9A1106 - EPA 5030B

Matrix Spike Dup (B9A1106-MSD1)

Continued

Vinyl chloride	33.9	0.50	ug/L	20	170	70-130	12.3	30	**
o-Xylene	22.2	0.30	ug/L	20	11	50-150	4.48	30	
m,p-Xylenes	43.5	0.40	ug/L	40	109	50-150	5.20	30	
Surrogate: 4-Bromofluorobenzene	49.8		ug/L	50	99.6	70-140			
Surrogate: Dibromoformmethane	45.3		ug/L	50	90.7	70-140			
Surrogate: Toluene-d8	50.9		ug/L	50	102	70-140			

[Signature]
Viorel Vasile
 Operations Manager



LABORATORY ANALYSIS RESULTS

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Project Name: Cooper Drum - South Gate

AA Project No: A874341
Date Received: 01/09/19
Date Reported: 01/18/19

Special Notes

- [1] = ** : Exceeds upper control limit.
- [2] = *** : Exceeds lower control limit.

A handwritten signature in black ink, appearing to read "Viorel Vasile".

Viorel Vasile
Operations Manager



AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311

Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 17374

70054043

Page 1 of 1

Client: Hoyer + Aldrich / JHA ENVIRONMENTAL, Inc. Project Name / No.: COOPER DRUM

Sampler's Name: Alex Fawcett

Project Manager: Chris Tengs / Matt Hillman

Site Address: 9313 Ramo Ave

Sampler's Signature: 

Phone: 744-371-1820 / 314-392-5970

City: Southwester

P.O. No.:

Fax: 949-453-1047

State & Zip: CA

Quote No.:

TAT Turnaround Codes *

- | | |
|--|---|
| ① = Same Day Rush
② = 24 Hour Rush
③ = 48 Hour Rush | ④ = 72 Hour Rush
⑤ = 5 Day Rush
X = 10 Working Days (Standard TAT) |
|--|---|

ANALYSIS REQUESTED (Test Name)

8260B
1 Dioxane
32300

**Special
Instructions**

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.